

Carbon Burn-Out™ - A State of the Art in Commercial Ash Beneficiation

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KEYWORDS: Fly ash, LOI, ammonia, NO_x

Progress Materials Inc. is the original inventor of the ash beneficiation technology Carbon Burn-Out™ (CBO™) with over 12 years of development and operating experience. CBO is a process that combusts the residual carbon in fly ash, producing a very consistent, low carbon, high-quality pozzolan. The process is continuous and is fueled solely by the residual carbon in the ash. Heat is recovered and sent back to the host power plant.

Commercial installations of CBO™ include the Wateree Station of South Carolina Electric and Gas, which was placed into service in January of 1999 and Winyah Station of Santee Cooper placed in service September 2002. Each is designed to process approximately 200,000 tons of fly ash per year and both have operated at very high capacity and availability levels since coming on line.

Listen carefully to claims of ash tons “processed” by others, in contrast to the class of technologies encompassing various separation techniques, all of the ash fed to a CBO™ facility (minus the carbon fraction that fuels the process) is beneficiated and sold into the pozzolan market; none of it goes to waste or requires disposal. Also in comparison to other non-thermal beneficiation technologies, no additional processes are required to remove ammonia from the ash, thus eliminating additional operating and maintenance costs. Ammonia contamination of ash typically results from the installation of SCRs or SNCRs. In addition, a significant advantage of the CBO™ process over others is in the recovery of heat that measurably improves the efficiency of the host power plant by simply completing the coal combustion started in the utility boiler. Full scale commercial testing indicates that Mercury is retained on the product ash, ultimately bound up in concrete when the beneficiated ash is utilized.

While increased carbon in fly ash, as a result of low NOx burner installations, was the original driver for application of this technology, new environmental requirements continue to play to the strengths of the CBO™ technology. EPA's actions to further reduce NOx, SOx and mercury emissions from coal-fired boilers are accelerating interest in the application of this technology. As the product ash is used as a partial substitute for Portland cement, CO2 emissions by Portland cement producers are displaced leading to a significant net reduction in greenhouse gas emissions.

CBO™ performance has significantly exceeded the expectations of PMI as well as the licensees, operators and other beneficiaries in terms of both ash production and heat recovery. The resulting product ash has proven highly attractive to the end users. High carbon ash, including ash resulting from coal/petroleum coke co-firing is readily turned into a very consistent high performance pozzolan.

With over eight and a half (8-1/2) unit years of commercial operation, CBO™ is a fully commercialized process. Two additional full-scale CBO™ facilities are currently under construction and will be operational in 2007. Once operational, CBO facilities will be producing approximately one million tons per year of a superior pozzolan and saving host utilities fuel and both the cost and potential liability of ash disposal.

Progress Materials will build, own and operate the CBO™ plants, using its own capital, expertise and manpower. PMI has an outstanding record in ash utilization; exceeding a cumulative 95% utilization over 15 years for ash management under its control.